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THE OPERATIVE TREATMENT OF PROSTATIC HYPERTROPHY.[1]

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THE emphasis laid upon various methods of surgical relief for hypertrophied prostate by different writers in the past few years presents a diversity of views which is somewhat confusing, but out of it all has come the evolution of certain well recognized facts which afford an abundant warrant for radical interference and give an encouraging outlook to the possibilities of prostatic surgery.

In accepting your kind invitation to open the discussion on this subject this evening I shall only endeavor to briefly summarize the practical points that have seemed of especial importance in my personal experience, which has been limited to a little over one hundred operations in which either perineal or suprapubic incision has been utilized for enucleation, dilatation, division or cauterization of prostatic obstruction.

If I omit the elaboration of operative technique and analysis of cases, except incidentally, and in addition venture to call attention to some points of pre-operative and post-operative management I trust I shall still be within proper limitations.

It is assumed that the surgery of prostatic hypertrophy does not include other and possibly inoperable forms of prostatic diseases, or that if the latter exist, their relation as complications is recognized. While pus, infection, carcinoma and sclerosis may complicate prostatic adenoma, it is ordinarily possible to measurably determine their independence or co-existence.

In view of the improvement in operative results, it is more

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and more a question of careful diagnosis in endeavoring to eliminate that class of cases fairly to be regarded as inoperable. While we have well recognized conditions, often making clear the question as to whether a case is an operable one or not, in the final analysis, careful study of individual cases and the personal experience and judgment of the surgical attendant count for much. A thickened and contracted bladder, damaged ureters and kidneys, and arterio-sclerosis do not necessarily contra-indicate radical operation upon the prostate. It is more a question as to the extent of these complications than the mere fact of their existence. Neither has it yet been demonstrated that slight enlargement of the prostate and symptoms of a mild character necessarily become grave, although undoubtedly they generally do.

The diagnosis of mechanical as well as other conditions is made in two stages. First: the pre-operative diagnosis; second: the information elicited at the time of the operation.

Pre-operative diagnosis involves chiefly the general condition of the patient; the degree and character of damage to bladder and kidneys as indicated by the condition of the urine; amount of residual urine; and such evidence of local conditions as may be obtained by rectal, urethral, and bladder exploration and inspection, including the use of the cystoscope.

Judicious preparatory treatment has much to do in determining the degree of permanent damage the kidneys have suffered, and consequently has a diagnostic relation to the choice of operative procedure. For example, it is my belief that if the very considerable number of operations which have been performed on the prostate in the last few years had been preceded, where possible, by patient systematic catheter drainage by the urethra that the death rate would have been somewhat lower. As a pre-operative measure of both diagnostic and therapeutic value, I believe that where possible all cases showing any material modification of the urine should preferably be given systematic drainage before operating. It is not always possible to have the catheter worn in the urethra constantly, even for a few days prior to the operation, but it is usually possible to secure drainage in this way during the night and for a few hours, at least, during the day. In a number of my own cases so treated,

a very marked improvement in the condition of the urine has occurred, particularly noticeable in the diminished amount of pus and epithelial debris and in the improvement in specific gravity, per cent. of urea, and reaction. Corresponding relief of bladder irritability has usually followed. If it has been worn and no improvement in the condition of the urine has occurred, a reasonable inference is, that the case involves greater surgical risk. Where the urine improves under drainage and irrigation there is usually corresponding improvement in the patient's general health and we are more safely left to consider local conditions.

Other preliminary treatment should not omit urinary antiseptics and free drinking of water and the employment of salines and tonics.

Formerly the length of the urethra was thought to have greater bearing upon the position, size, and shape of the prostatic growth and was supposed to imply an intravesical displacement and elevation of the vesical orifice with corresponding elongation of the prostatic urethra. Apparent increase in the length of the urethra, as shown by catheter measurement from the meatus to the point where urine is obtained, does not always signify a real increase in length, and on the other hand measurement by catheter will sometimes indicate a urethra of normal length when there is in fact a considerable elevation of the vesical orifice within the bladder.

Demonstration of these facts can often be made by measurement prior to operation and subsequent investigations at the time the bladder is opened. Nevertheless, the catheter is of value in its diagnostic relation to the choice of operation. Where its repeated use for measuring indicates a greater or less fluctuation in the apparent length of the urethra the evidence obtained is, of course, not so reliable as where it shows a tolerably constant and uniform result.

My cases have not indicated that the amount of residual urine has very great significance as to the size, shape, or position of the growth. A very small growth about the vesical orifice or just below it within the prostatic urethra may produce complete retention, whereas, in another case a massive hypertrophy as felt by rectal examination may produce no residual urine and

occasion no functional disturbance of the bladder. Where there is a congestive element added to the permanent hypertrophy the amount of residual urine is prone to be variable and its quantity will also vary owing to whether the catheter is used when the rectum is loaded or empty.

As to the significance of rectal examination in relation to operative procedure, my cases have usually shown that a large rectal tumor implied increased difficulty in reaching the bladder through the perineal opening. On the other hand, some have shown that considerable elongation of the prostatic urethra and difficult access to the bladder through the perineum are associated with a comparatively small rectal tumor.

In several cases a very different condition of affairs has been discovered upon exploring the prostatic urethra and bladder, than was anticipated prior to operation. In one case where very little enlargement was indicated by rectal examination, it was concluded that the growth was probably intra-vesical, perhaps being located about the vesical orifice, and a suprapubic opening was made. Conjoined examination by the rectum and bladder failed to disclose any marked enlargement of the prostate within the bladder or below it, until the finger was passed from the bladder into the prostatic urethra, where a pedunculated growth larger than an ordinary olive was found attached to the left side of the prostatic urethra near the lower end of the left lobe. The vesical orifice was somewhat contracted and the prostatic urethra below this point was considerably dilated at the point where the growth was located. It was easily detached by the finger and should have been removed through a perineal opening. Its capacity for producing obstructive dysuria was very apparent, yet it had not modified the length of the urethra or produced marked evidence of enlargement by rectal examination and when the bladder was opened above, its presence was not determined by conjoined suprapubic and rectal examination until the finger was passed down into the prostatic urethra.

The cystoscope would have been of very little use in such a case and the catheter, the finger in the rectum and all ordinary diagnostic resources were useless until the bladder was opened. Wider operative experience and opportunity to examine the size, shape, and position of the intravesical and intra-urethral growths

has led to a more general recognition of the fact that neither the perineal or suprapubic route can be constantly and universally relied upon. Generally speaking my earlier cases were followed by better after-results as to bladder function where a suprapubic or a conjoined suprapubic and perineal opening had been made. I have, however, made the suprapubic opening in some instances only after failure to satisfactorily reach the growth through the perineum. Fully four-fifths of my cases have been operated by the perineal route for the double reason that I have regarded it as less dangerous and have found it more easily and quickly performed. Its results have in the past few years compared very favorably with the suprapubic method and an increasing proportion of cases have been reserved for it as larger personal experience has increased my confidence in its more general applicability. The majority of the perineal operations have been simple median openings with lateral incision from within the prostatic urethra. The intra-urethral incision has varied owing to the apparent size, shape, and position of the growth after digital examination. In some cases with a large, smooth, uniform mass extending from the vesical orifice to the lower end of the prostate an incision has been made near the center of this mass throughout its length on either side of the urethral wall, and finger enucleation employed. In others, after a median perineal section, a small incision has been made over the lower end of the growth from within the urethra and enucleation accomplished with but little sacrifice of urethral mucous membrane.

The technique, with some modifications, has been much the same as that in the description of "A New Method of Removing the Lateral Lobes of the Prostate by a Median Perineal Incision," a paper which I presented to the Association of Genito-Urinary Surgeons in 1892, and referred to briefly in connection with a paper read before the same body in 1891. (See *Journal Cutaneous and Genito-Urinary Diseases,* February and December, 1892.) I was not aware at that time that Gouley had suggested this method in 1873, or that anyone had attempted to execute it. Its performance resulted from the apparent ease with which the lateral lobes could be removed as indicated by a careful examination of the prostatic urethra while I was operating for stone through a median perineal incision. Various modi-

fications of this method of finger enucleation have in the past few years been practiced.

In other cases where the temptation to direct attack from within the canal has seemed invited, yet, where the growth has been of considerable size as indicated by rectal examination, a modification of Young's technique has been employed by making an inverted Y and the prostatic capsule opened at the side of the urethra near its apex, but the capsule has not been opened until after the median perineal opening has been utilized for examining the prostatic urethra and vesical orifice and as far as possible the intra-vesical growth, where such has existed. Various retractors have been used, and have aided as a rule in dragging the prostate down. Counter-pressure over the bladder has alone answered in several cases.

Extra-urethral methods seem ideal in suitable cases, but universal application of this or of any other method can scarcely be made, particularly where it seems quite well established that many cases of real prostatic obstruction involve little or no lateral or median hypertrophy and produce symptoms chiefly because of a little thickening of, and contraction about the vesical orifice, or through some other perversion of bladder function not involving enlargement of the prostate as generally understood. These cases, nevertheless, present a change in the prostate productive of symptoms and necessitating operative relief, and their exact character is difficult to determine until direct digital examination of the prostatic urethra and vesical orifice has been made. While the cystoscope contributes materially to a knowledge of existing conditions, its limitations are many. The tendency to provoke bleeding and the difficulty in manipulating it where the growth has attained much size have lessened its practical value in my personal experience.

It will be conceded that next to the question of mortality comes the question of immediate and ultimate functional relief to the bladder and avoidance of complications associated with and following an operation.

To avoid hemorrhage in perineal enucleation, particularly, where the quantity of prostatic tissue removed has been large, the gauze packing which has been used in my operations has in some instances apparently contributed to the development of epi-

didymitis. In one case it seemed to threaten the production of recto-urethral fistula, which complication was fortunately averted by prompt removal of the packing. The necessity for very full packing has been lessened in my experience by a little more deliberation in doing the enucleation. More care in gradually detaching prostatic tissue and slowly twisting it off with forceps after finger detachment, has manifestly lessened bleeding. Packing should be removed within a day or two at most after its introduction. To avoid bleeding in removing the packing I have been in the habit of injecting two or three ounces of sterile oil into the bladder and around the drainage tube. It softens the packing so as to make its removal easy.

In averting the development of epididymitis not only the avoidance of over-packing deserves consideration, but also the adaptation of the most perfect support possible for the external genitals.

Continuous irrigation for several hours by the use of a fountain syringe and a medium and a large catheter is always used.

Urinary incontinence has followed in but three of the cases I have operated upon by perineal enucleation and two of these three cases lasted but a few weeks. One of the three has persisted periodically since the patient got up from the operation, about nine months since. These cases were much benefited by the passage of full-sized sounds. Recently periodical dilatation as a routine after-treatment has been employed for several weeks following convalescence with good results, a Kollmann's dilator being used for this purpose, as it has seemed effective and is less painful than a solid steel sound.

In this connection it should be noted that in some cases of perineal enucleation there has been a very evident tendency to contraction of the urethra, although no incontinence occurred. In one case operated upon in September, 1904, where a very large prostate was removed through the perineum, decided narrowing of the prostatic urethra followed in two or three months with return of cystitis and partial retention of urine. Immediately after recovery from the operation the patient's symptoms had been completely relieved until the occurrence of this traumatic narrowing. In this case, within five months following the prostatectomy a soft stone had formed in the bladder and a

severe cystitis developed. Nine months following the removal of the prostate a median perineal incision was made for the removal of the stone and very pronounced cicatricial narrowing of the prostatic urethra was found, involving considerable difficulty in its dilatation to a sufficient extent to admit the index finger. Dilatation in this case has been followed by restoration of bladder function.

It may be argued in this case that extra-urethral enucleation would not have been followed by stricture. Perhaps this may be, as this was a massive prostate which could have been easily attacked through a trans-perineal opening and entering the capsule outside the urethra. Such an opening can, however, scarcely insure against opening into the urethra from within the capsule where an unusually dense and adherent mass has to be dealt with. However, extra-urethral access to the lower end of the capsule according to the technique of Young and others is surgically ideal in suitable cases.

Perineal fistula has occasionally been an annoying after-consequence, but it has not permanently persisted in any case. Its prompt relief has usually followed where the opening has been curetted or cicatricial tissue excised and where granulation has been stimulated by nitrate of silver or carbolic acid and the perineum frequently shaved and a dry gauze dressing worn. This has been in some instances supplemented by keeping a catheter in the natural channel or inserting it at regular intervals to avoid contact of urine with the fistula.

Although in cases recovering from the immediate effect of the operation, vesical sclerosis and atony have impaired the ultimate result with some patients who had seemed suitable for operation, an improvement has usually followed in the local and general condition and has therefore as a rule justified its performance.

The statistical evidence of lower death rate where complete removal has occurred as compared with partial removal and other palliative operations makes it a matter of some question as to how far anything but complete removal should be employed. Still there are cases in which some immediate operative measures must be employed and where but slight power to sustain the shock of any procedure exists.

The existing preference for enucleation has developed so strongly within the past three or four years, that we may be in danger of under-estimating the real value of some of the milder operative procedures. One would scarcely choose to do a primary enucleation in a case with a history of more or less prolonged prostatic obstruction culminating in sudden and complete retention, where catheterization proves impossible, and where no opportunity for careful diagnosis as to renal and other complications can be attempted, and yet where incision with bladder drainage can easily be done under local anaesthesia and involves but little shock. In a number of cases I have successfully and more or less permanently relieved the prostatic obstruction by the use of my method of applying the galvano cautery through a median perineal opening where the opening has been primarily made under local anaesthesia for the relief of that class of cases of sudden complete retention above referred to. I have also repeatedly used the cautery in a similar manner where I have had more deliberate opportunity to decide upon a method of procedure and where the demand existed for extreme care in the avoidance of radical measures.

It is important to recognize the mechanical object of all operative measures in dealing with prostatic obstruction and this object is, chiefly, to restore as far as possible the original position of the vesical orifice and to make both the vesical orifice and the prostatic urethra as nearly normally permeable and free from thickening or obstruction as is possible. Even extensive enucleation of adenomatous growths does not always accomplish this important end. Thickened mucous and muscular tissue must be dealt with, particularly at the vesical orifice. In favorably influencing this obstructive factor the use of the cautery by a method which I have adopted helpfully supplements enucleation.

Dr. Rilus Eastman has reported a case where after enucleation evidences of obstructive cystitis persisted and where he reopened the bladder through a median perineal incision and used my method of cauterization about the vesical orifice and a most satisfactory result followed. I have had a similar experience and have also repeatedly used this method as a part of my prostatic operations immediately, or in some instances within a few days, following enucleation. In this relation it is not de-

sirable to burn a deep series of grooves as in the cases where the cautery alone is relied upon, but to modify vascular supply and diminish thickening by light direct application of a free hand cautery (such as the rhinologists use), applied directly to the vesical orifice. This is easily accomplished through the diagnostic tube of my instrument. If this method of comparatively superficial application of the cautery, particularly about the vesical orifice, more frequently accompanied enucleation it is my belief that ultimate results would be more satisfactory. Contrary to the views expressed by many, I believe the real benefit of galvano cauterization applies to the softer growths rather than the sclerotic forms, and that the establishment of a deep groove is not always essential, but that the shrinkage of thickened tissue about the vesical orifice by light direct cauterization is often desirable to the accomplishment of the more perfect mechanical and functional results. In determining the necessity for supplemental cauterization I have chiefly relied upon the information elicited by digital examination and by the use of the diagnostic tube of my prostatic incisor.

This method of using the cautery consists in utilizing a perineal opening which has been dilated to sufficient size to admit the index finger and the insertion of my prostatic incisor into the bladder. The instrument consists of a diagnostic tube, forty-two millimetres in circumference and measuring six and one-half inches in length (without the obturator), and a movable cautery. This tube has an oblique distal end which carries a small incandescent light. On the other end of the tube fits a diagnostic window and near it is a nipple for air dilatation and also connecting points for lighting the lamp.

After inspection is made of the inside of the bladder the cautery is inserted and the cautery knife exposed to any desired length by a device on the outer end of the instrument. The cautery knife can be drawn down into the prostatic tissue to any desired distance. The bladder, meanwhile, is distended with air and aid in locating the position of the cautery knife is secured by a small diagnostic window near the outer end through which the cautery and vesical orifice can be observed. Where bleeding is profuse the end of the diagnostic tube can be inserted slightly beyond the vesical orifice and a soft catheter inserted directly through the diagnostic tube into the bladder. Prolonged irriga-

tion can then be used and when the fluid returns clear the catheter is removed, the diagnostic window is placed in position and the bladder distended with air. Patient effort will ordinarily be rewarded by an excellent view as the instrument is now drawn down into the prostatic urethra. In cases where bleeding makes inspection difficult or impossible the hollow metal sleeve can be used over the cautery shaft. This sleeve is made like an ordinary steel sound with but slight curvature at the end. It has an opening near the end and opposite the cautery through which the latter can be manipulated. To its outer end is attached a small nipple for air dilatation. Previous digital examination aids in accurate location of the cautery knife. In addition to the adjustable cautery above referred to, I frequently use a free hand cautery passed through the diagnostic tube and applied with the operative area under direct observation. I occasionally use cautery incision alone and my instrument will make any incision which can be made by the Bottini instrument, or by proper adjustment of the movable cautery blade will make light superficial cauterization. It has the advantage of giving direct inspection of the inside of the bladder and prostatic urethra and allowing subsequent digital examination of the incision.

So far as I am aware, the first application of the cautery through a median perineal opening with the operative area under direct observation was made by myself in June, 1890. (See notes on Surgery of the Prostate, *Journal of Cutaneous and Genito-Urinary Diseases,* March, 1892.) One of the earlier models of the instrument here presented was reported in the *Journal of Cutaneous and Genito-Urinary Diseases,* June, 1902, and the first model of this instrument had been shown to the Indianapolis Medical Society the year preceding. The instrument has resulted from the success attending the use of the cautery by direct application in my earlier cases above referred to. The application of the cautery by this method has commended itself to me because of the difficulty of knowing when and how far cautery incision should be made without having first made a perineal opening through which to obtain digital and ocular examination as to the size, shape, and position of the growth. In addition, perineal opening affords excellent drainage subsequent to operation. However successful the Bottini method may be, it seems to involve an element of uncertainty, and does not afford an opportunity for the

direct examination of the growth which is secured by the method I have suggested.

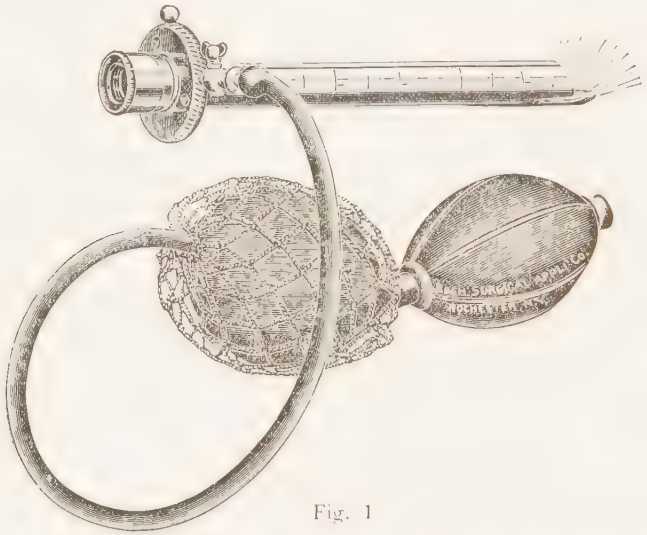

Fig. 1

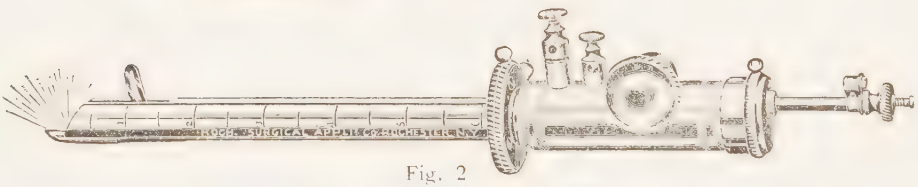

Fig. 2

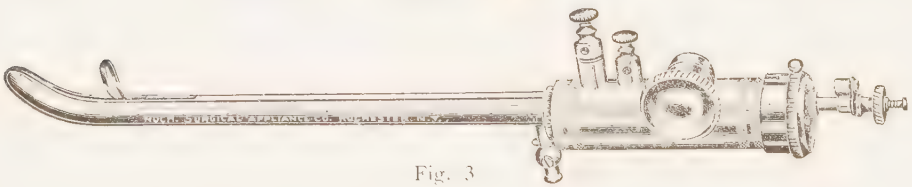

Fig. 3

Note. The three foregoing illustrations give a fair idea of my instrument. The first shows the diagnostic tube with the obturator removed and with the air dilating bulb attached. Illumination is obtained by the small lamp on the inner end of the instrument, and inspection is made through the diagnostic window on the outer end. This window makes the instrument air tight.

The second illustration shows the adjustable cautery introduced through the diagnostic tube. The circular thumb screw is for shifting the cautery blade in either direction. The small screw on the outer end of the shaft is for elevating and lowering the cautery blade. The diagnostic window through which the small shaft passes gives a view of the position of the cautery in operating.

The third illustration shows the cautery armed with a metal sleeve instead of the diagnostic tube, and is for use where bleeding makes inspection difficult or impossible. Air dilatation is used when either the diagnostic tube or the metal sleeve is attached. In some cases a free hand cautery, such as the rhinologists use, is sufficient, and can be applied by the use of the diagnostic tube alone.

SYMPTOMATOLOGY OF CHRONIC HYPERTROPHY OF THE PROSTATE.

By Frederic R. Sturgis, M. D., New York.

FOR the sake of convenience the symptoms may be divided into three groups, but it must be understood that these groups are not always as distinctly marked off as it is stated in the books, for they may encroach one upon the other in such a manner that the dividing line is oftentimes difficult to determine. Not only that, it may happen that the disease may return again to an earlier stage.

The first stage is usually that in which the patient notices he is obliged to get up at night to pass water, a thing which heretofore had not been the case, and this may sometimes come on so insidiously and slowly as not to attract any particular attention, especially as this symptom is frequently due to other causes than prostatic enlargement and may have occurred intermittingly for a long period of time. Most authors state that this frequency of urination occurs more particularly at night than during the day time, and perhaps the reason for this is that if the patient is disturbed during sleep the occurrence is more likely to make an impression upon the mind than if it occurs during the day, and the mere fact that the patient passes urine two or three times more during the day escapes notice among the many circumstances which occupy his mind, and so is not observed. I myself think that this frequency is diurnal as well as nocturnal, because in cases where the patients are confined to bed from some inter-current cause this frequency is noticed during the day also and has led to the belief that the recumbent position is one of the principal causes for this frequency of urination. This also I believe to be an error and I am inclined to think that neither recumbency of position nor any particular period in the twenty-four hours can be assigned as a peculiarity in this first stage of prostatic hypertrophy. In the nocturnal excess of frequency it is noted that it is more usual in the second half of the night than in the first half—

that is to say, toward morning rather than when the patient first goes to bed—and this perhaps is due to the fact that the early sleep is often apt to be the heaviest and soundest, and as the bladder has been thoroughly emptied before the patient gets into bed, and as insensibility is more marked during the first sleep, the bladder is not excited by the accumulation of urine to the same extent that it is later on when it becomes fuller. In this earlier stage the urine is not changed in character. It is usually perfectly clear and normal looking, nor is the amount increased, although it sometimes happens that an intermittent polyuria is noticed. No changes are observed in the bladder, that is to say in its power to retain urine or in its expulsive efforts. If necessary the patient frequently is able to retain his water even after the necessity for micturation is present, and when the patient passes his water the expulsive power of this viscus does not seem to be changed. It should be borne in mind that this frequency of urination must not always of necessity be ascribed to any change in the condition of this organ, because it is a frequent occurrence from other causes, and it is this fact that oftentimes induces the patient to overlook the first stage in this disease. This condition of affairs lasts for a longer or a shorter time according to the general condition of the patient, and although this disease is considered to be one of middle and advanced years, it may occur in persons of a comparatively youthful period of life, and all of these symptoms may be associated together—except indeed the last stage—without any evidence whatever of prostatic enlargement by the digital or cystoscopic examination, and these are the cases probably which are spoken of under the somewhat loose term of "prostatism without symptoms."

The patient having, as I say, gone through the first stage for a varying period of time arrives now at the second stage, which is more serious and is marked usually by a greater or less insufficiency of the bladder, and this is associated with a retention of the urine which occurs suddenly and is generally traceable to the patient's having taken cold, to his having indulged too freely in the pleasures of the table—especially in the use of liquors, or to sexual intemperance. This condition of affairs however is usually evanescent and under rest and proper treatment passes off, returning again to the first stage marked by the frequency of urination. These are the cases in which the patient will inform

the surgeon that he has taken cold and that it has settled in his bladder. Sometimes, however, this condition remains more or less permanent and is marked by an incomplete and intermittent retention of the urine, which is probably never completely voided from the bladder and constitutes the residual urine. In this stage the urine still presents no particular change in its character, and only slightly so in the amount which is passed—which is generally somewhat diminished in total amount owing to the residual urine which is present; but so far as the gross appearances are concerned there seems to be no change. The stream of water is not perceptibly diminished nor altered in shape, unless urethral strictures be present, but if no complications occur the stream is of its usual size and is passed pretty freely without much hindrance or obstruction, except that the ejaculatory power is not so strong as formerly and the stream instead of showing its usual parabolic curve is apt to have a flat trajectory and towards the end to dribble away, the last few drops of urine frequently being deposited upon the shoes or upon the lower portions of the trousers. This, of course, is markedly increased if urethral strictures are present. This change in the stream of water is due to the fact that the bladder has lost its expulsive power from dilatation, and sometimes the difficulty in urinating is so great as to oblige the patient to press upon his lower abdominal wall, over the pubic region, in order to assist the expulsive power of the bladder and so to relieve the pain which is frequently present from inability to relieve the distended bladder. It is in this stage also that the patient begins to complain of a sense of weight in his perineum, especially marked if he sits down or crosses his legs, and usually relieved if he stands up or moves about. In this stage also the catheter comes into play as a means of relieving the over-distended and painful bladder, and it is believed by some authors that the use of this instrument is the commencement of the cystic disturbances which characterize the third stage in the symptoms of this disease.

In this third stage we get the worst features of the prostatic hypertrophy, in the presence of more or less complete incontinence of urine, due to the over-distention of the bladder, which being dilated and having lost its contractility, slops over, so to speak, and this incontinence of the urine is due to the overflow from the bladder which, unable to contract upon its contents, allows the water to dribble away through the urethra, which becomes noth-

ing more nor less than an open pipe. In this stage also occurs the condition of polyuria, due very probably to a co-existing and consequent disease of the kidneys—these organs being unduly stimulated and secreting much faster than the unfortunate bladder can get rid of the urine which is sent to it. Now also we begin to note constitutional disturbances in the shape of extreme thirst and constant dryness of the mouth and fauces, due to a diminished flow of the saliva, loss of appetite, with costiveness rather than constipation—due to mechanical obstruction and pressure upon the bowels which prevents the evacuation of this tube, and decided febrile disturbances—the so-called urinary fever, frequently associated with intermittent chills. In defecation, it is noted that the contents of the bowels are changed in form and become voided either as small flat balls or else as ribbon-like strips—being moulded and changed by the hypertrophied organ pressing upon the contents of the bowels as it passes out. The urine, which before has shown no change, now begins to exhibit that peculiar ammoniacal, foul-smelling condition, which is so typical of retained urine. It becomes turbid, filled with shreds, pus, and detritus of various kinds from the diseased bladder, and loaded with the crystals of triple phosphates and other sequelæ of ammoniacal decomposition. In addition to this pain over the pubic region is complained of as being constant and severe, and this may be associated with a genuine urethritis which may proceed, and terminate, as some of the German authors state, in an orchitis with obliteration of the ejaculatory ducts and more or less persistent and copious hemorrhage. I myself have never seen any such conditions which I could refer as due solely to prostatic hypertrophy, and I should be inclined very strongly to question whether the symptoms were really due to this disease.

Such in brief are the symptoms which accompany hypertrophy of the prostate, which I have been obliged to present very sketchily within the ten minutes allotted me. I have not touched upon the complications in the shape of cystic and renal diseases which are frequently concomitants and results of this hypertrophy, nor have I dwelt upon the changes which occur in the urine, nor the evidence given by the physical examination with the finger or the cystoscope, inasmuch as all of these points are to be taken up by the other speakers who are to follow me.

THE PATHOLOGY OF PROSTATIC HYPERTROPHY.

By Walter S. Reynolds, M. D., New York.

MANY points have yet to be cleared up before the solution of the problem of prostatic hypertrophy is satisfactorily settled. Much has been done of late by Ciechanowski and others in this direction, and while the conclusions arrived at seem logical in the main, there are still many points which must be further studied before they can be generally accepted and the subject finally closed.

Early investigators were obliged to satisfy themselves with such examinations as it was possible to make at the time, and on such examinations theories were advanced which were accepted by their followers without question. In consequence a great variety of opinions were held and taught, lacking in confirmatory evidence.

Nearly all the studies so far made have been from the condition as found after well marked changes have taken place in the organ; of the primary conditions which precede or bring about these changes much evidence is still lacking, except perhaps, from a clinical point of view.

The condition is one so frequently encountered that it has been held to be of almost universal occurrence in man—a physiological accompaniment of advancing years. But Sir Henry Thompson after a dissection of a number of cases says: "It has been said to be the common inheritance of old age, but on the contrary, it is a complaint which a very large majority of elderly men escape." His investigations showed that in 32% some enlargement occurred, while in 12% the enlargement was sufficient to cause symptoms during life. It would be interesting if it were possible to obtain further information on this subject, with a full and complete history of the cases and the pathological findings in each case.

The normal prostate weighs from 4-6 drachms and measures about 1½ inches in length; a little more than this in breadth, and

is about ¾ inch in thickness. As it surrounds the urethra for about one inch of its length at its exit from the bladder, alterations in its size and character produce changes in the relations of the urethra, which, are productive of symptoms relative to the urinary function of which these patients complain.

An organ having such intimate relations to the urethra and important sexual centers, when the seat of pathological changes, would naturally be expected to give rise to symptoms of more or less intensity early in their course. Such is not always the case however, and until sufficient obstruction arises to interfere with urination symptoms are apt to be absent.

What the exact function of the prostate is we are unable to say definitely. We know, however, that in animals it is clearly a sexual organ and that some species are subject to hypertrophic changes. In the foetus it remains a bilobed organ resembling that of the animal up to the fifth month, when developmental changes take place, which unite the two lobes into a solid body connected by a bar or isthmus of tissue, called by some the third lobe.

The organ itself is made up of a number of glands, of the compound tubular variety, lined by a single layer of columnar epithelium, opening through a number of ducts on the floor of the urethra on either side of the verumontanum. There is a supporting meshwork of connective and muscular tissue surrounding and enclosing the glands. A capsule is formed by the connective tissue becoming more dense and compact on its surface, while surrounding it, is a sheath formed from the pelvic fascia.

From its relation to the urethra and bladder it is believed to play an important part in the act of micturition. The apex of the gland is in close relation to the posterior layer of the triangular ligament, so that as enlargement takes place it is almost altogether in a posterior direction, pushing backward and upward into the bladder and into the rectum to a less degree.

The enlargement may assume considerable proportions. Occasionally it may be as large as a good-sized cocoanut and weigh as much as twelve ounces or more. Ordinarily the enlargement is not more than once or twice its normal size. Its size and weight seem to depend largely upon which element is more largely affected by the pathological process. The large prostates are

soft and comparatively light and the glandular tissues in such cases seem to be principally affected. Where the stromal tissues are more involved the prostate is hard, firm and heavier. Whether there is any relation between the two forms as seen clinically cannot be definitely stated, though such would seem to be the case. This, however, has been denied by some authors who claim that the two varieties are entirely distinct.

Thompson classifies the enlargements according to their position as follows:

I. Where the enlargement of the gland takes place equally —a general enlargement.

II. Where the median portion is principally involved.

III-IV. Where the enlargement is most marked in either the right or left lobe.

As a result of the prostatic overgrowth, changes in the length and direction of the urethral curve result. The length is in nearly every case increased; this takes place in a posterior direction, as the apex is fixed at the triangular ligament. The curve may be so altered as to offer great difficulty to the passage of instruments, especially if the median portion is principally involved. If the enlargement is more marked on one side, deflection of the urethra to the opposite side takes place.

As the enlargement pushes back into the bladder the internal meatus is raised, and a pouch or sulcus is formed behind the prostate in which more or less residual urine is contained, and in which after cystitis has developed vesical calculi are quite often found.

Again referring to Thompson's work, we find a classification based upon the character of the enlargement:

I. Where the increase in glandular and stromal tissues are proportionally equally—the enlargement taking place evenly and is seldom very great.

II. Where the increase takes place in the stromal tissues, the connective tissue being principally involved, and is classified as a fibromatous hyperplasia.

III. Where the overgrowth principally involves the glandular structures, these are gradually replaced, as the glandular substance disappears, by fibrous tissue.

IV. Tumor formation, a local hypertrophy—a very com-

mon formation. These tumors bear a close resemblance to fibromata occurring in the uterus and other parts of the body, and were so considered by Rokalansky; others describe them as fibro-adenomatous, with some muscular tissue—*i. e.* composed of the same tissues as the prostate. They are often surrounded by a fibrous tissue capsule from which they are easily shelled.

This classification, while useful from a clinical and descriptive point of view, affords little knowledge of the pathology of the condition.

While many theories have been advanced to account for the pathological changes there were three more generally accepted ones, which deserve notice. The teachings of Guyon were those probably most generally held. He maintained that the process was one of senile change and the term senile hypertrophy came into general use. This change was considered a fibrosis incidental to advancing years—a part of a general atheromatous degeneration. This theory took no cognizance of the large class where fibroid changes are least marked. Velpeau and others maintained the theory of tumor formation to account for the changes, and that the changes were similar to those occurring in fibroids of the uterus.

Another theory was that of Harrison, who claimed that the enlargement was of the nature of a compensatory hypertrophy, the bladder being first involved.

For a number of years no advances were made in the subject and the various theories spoken of were pretty generally held by authors. It was not until Ciechanowski took up the matter that any more light was thrown on the subject.

Ciechanowski's studies led him to believe that the changes occur simultaneously in the glandular and stromal portions of the organ, and that inflammation is the direct cause of the enlargement. This was shown by the presence of round cell infiltration, indicative of somewhat acute inflammatory action. The round cells are found in the stromal portions, more particularly about the ducts and beneath the mucous membrane of the urethra. There are also seen fibroblasts about the ducts and acini denoting cicatricial changes that are taking place. These changes may go on to compression or obliteration of the ducts or acini.

In the glandular structure what was thought to be true

adenomatous tissue formation is ascribed to dilatation of the gland tubules already present, and not to the formation of new acini.

The cells lining the acini may show indications of a catarrhal inflammation, or in some cases the contents of the acini show true suppurative changes. The form of the enlargement depends upon the situation of the changes taking place in the gland.

Green, Brooks, and others have also made painstaking examinations and their conclusions are largely in accord with those of Ciechanowski.

In spite of the excellent work that has lately been done we are not in a position to take a too decided stand in regard to the question.

PHYSICAL EXAMINATION IN PROSTATIC HYPERTROPHY.

By Edward L. Keyes, Jr., M. D.

ONLY two things are always and essentially necessary for salvation in examining the prostatic. First and foremost, rectal touch, next, palpation of the loins. I do not mention urinalysis since that third essential is to be spoken of by Dr. Heitzmann. But all other methods of examination—catheterism, sounding, cystoscopy, skiography—must not only be omitted in certain cases, but most of these may in certain cases do the patient real harm.

Let us suppose a man 65 years old comes to your office complaining that he urinates too frequently at night and starts the stream with some difficulty in the early morning. Suspecting prostatic hypertrophy, the first thing to do is to bid him urinate into a glass. Hold the glass up between you and the light and let your whole future examination depend upon what you see. If the urine is sparkling and clear, neither purulent nor bacterial, beware of any examination involving the introduction of an instrument into the urethra. But, if the urine is cloudy with bacteria or foul with pus, you may proceed to any sane instrumentation with little fear of damage unless the kidneys be gravely infected.

Supposing then the urine sparkling. Bid the patient bend over the back of a chair with one knee upon its seat. Protect your finger with a rubber cot and introduce it into the rectum, sweeping it across the anterior wall of the gut, palpating the membranous urethra, the prostate, and as far as possible the seminal vesicles and the base of the bladder, in order to determine any palpable morbid changes in or about these regions. I might talk to you an hour in a vain endeavor to describe the sensations imparted by the various normal and abnormal structures; but you would much better employ that hour in examining a dozen prostates as they come to you in the clinic—the more normal the better. For it is only the man who knows what the normal prostate feels like that can be depended upon to recognize the enlarged prostate.

It is my belief—contrary no doubt to the opinion of most of you—that the hypertrophied prostate is always palpable as such *per rectum*.* In a series of several hundred cases which I have gone over with reference to this point, it would appear that, while the enlarged prostate is always palpable as such, the normal prostate is often supposed to be enlarged; so that the mistake is made—not of calling a hypertrophied prostate normal but of calling a normal or even an atrophied prostate hypertrophied. The reason for this is that the full bladder may depress the prostate so that it bulges into the rectum as though it were enlarged. Hence if, in the course of this rectal examination, you feel the organ jutting into the anterior wall of the rectum, reach your other hand around to the patient's hypogastrium and impart to it a series of sharp taps similar to those employed in renal ballottement. If the bladder is full the impulse will reach your rectal finger. If there is a large neoplasm or stone these too may be felt. In case you are not sure of the result of this diagnosis, turn the patient over; put him upon his back; introduce the finger into the rectum and repeat the maneuver. In this position you will perhaps not be able to reach so high up the rectum, but you will distinguish better the abdominal impulse.

Now examine the patient's loin *secundem artem* by bimanual palpation and ballottement with the abdomen flaccid and, with

* Since writing this I have seen a large adenoma removed from a prostate that felt normal by rectal touch.

the aid of deep inspiration, search for deep tenderness or for an enlargement in the region of the kidney.

Here stop your examination and sum up the information obtained. You have learned whether the prostate is large, whether the urine is infected, whether there is any considerable retention of urine.

Supposing the prostate is large, the urine uninfected, the residual urine not sufficient to distend the bladder so as to make it distinguishable by bimanual palpation. If such be the case, make no further examination; but endeavor by means of such measures as the hot rectal douche, the administration of alkaline and balsamic medication and such hygienic measures as may suggest themselves to ameliorate the patient's symptoms without putting any instrument in his bladder. In a surprisingly large proportion of cases you will succeed, and, while you may accuse yourself of having made an inadequate examination, of not knowing distinctly the shape of the prostate, the amount of the residual urine, or the length of the urethra, the patient, on the other hand, will have to thank you for having spared him the dangers of grave infection by the introduction of an instrument unnecessarily employed.

But, supposing your treatment of this case fails, or supposing your examination reveals a distended bladder, then, even though the urine be limpid and uninfected, you must carry your examination further and introduce a catheter into the urethra. Unless the emergency is great, however, this instrumentation should be surrounded with every precaution. The patient should be put to bed, urotropin at a dose of 5 grains three times a day, should be administered and, after 24 hours of this, a sterilized, soft-rubber catheter should be introduced into the urethra. As it passes in, note the presence or absence of spasm in the membranous urethra as well as the amount of obstruction to the introduction of the instrument at the neck of the bladder. Carry the eye just within the bladder, halting when the urine first flows.

If you thus empty the organ before a pint has come away, inject 6 oz. of nitrate of silver—1:10,000—and withdraw the catheter. Subsequent catheterization may be required for treatment, but not for diagnosis. If, however, you draw a pint and some urine still remains in the bladder, it is safer to leave it

there and to withdraw it at subsequent catheterizations, passing the catheter with similar precautions every three hours until the bladder is empty; but this again is treatment, not diagnosis.

Such are the precautions with which catheterism should be surrounded when the urine is uninfected. If infection is present, however, you may introduce a sterilized catheter without fear of doing the patient any harm so long as you follow the catheterism by a nitrate-of-silver wash. And nitrate of silver, let me assure you, is far better than any of the new, organic, silver compounds that have replaced it in many other fields.

On withdrawing the catheter, note the urethral length from the meatus to the point where the eye of the catheter rested just within the bladder. A urethral length at or under 8 inches suggests a prostate that may be very easily handled by the perineum. A urethra over 9 inches long means a long reach if this lower route is employed in operating.

Next comes the examination for stone. Every prostatic should be examined by X-ray, by searcher, or by cystoscope, for one can never feel sure that stone is absent however mild the symptoms may be. I leave the preference of instrument to be employed to the choice of the individual operator. A man who is familiar with the searcher can complete his examination rapidly with marvelously little discomfort to the patient and with very accurate results: yet he will fail to find encysted stone or stone in a deep pocket behind the prostate. The cystoscopist has his own troubles; but, if he gets a satisfactory view in a tame bladder, can assure the patient on the subject of stone very satisfactorily. Yet, in uninfected cases, I prefer the X-ray, inasmuch as it makes one less instrumentation.*

If there is question of operation the patient's general condition must be considered, while the urinalysis is always of prime importance. But cystoscopy for the ordinary delineation of the prostate I have not employed nor have I had occasion to require this.

* Yet the X-ray is singularly and inexplicably fallacious in the diagnosis of bladder stone.

THE LIMITATIONS OF THE CATHETER IN PROSTATIC HYPERTROPHY.

By Hermann Goldenberg, M.D., New York.

WHEN, two weeks ago, your president asked me to contribute a short paper on the limitations of the catheter in hypertrophy of the prostate, I acquiesced with reluctance. I fully understood that within the short time at my disposal, much of importance would have to be omitted. I accepted, however, because I thought that at the present time when the operation of prostatectomy has justly come into favor, it was opportune to give the catheter treatment its just due, and to state when and under what conditions catheter treatment is justifiable and indicated. A consideration of this subject must necessarily include a mention of some indications for operative interference or, to be more exact, for prostatectomy. My experience with the Bottini operation is limited. I am glad that it has been left to my friend, Dr. Willy Meyer, whose work in that field is well known to all of you, to speak on that subject.

Anyone who has followed the development of prostatic surgery, must admit that it is only within the last decade that real progress has been made in the direction of the permanent relief of that long chain of symptoms which is due to the hypertrophy of the prostate, and that, up to ten years ago, our mainstay in the treatment of urinary trouble in old men was the catheter.

I think nobody will deny that,—aside from the technical improvements in the manufacture of catheters and the progress in our methods of asepsis and antisepsis,—we have not gone far beyond what was known on the subject one hundred years ago by Home and half a century ago by Mercier, Civiale, and others.

Our first great advance was the Bottini operation, and then came the era of prostatectomy. In spite of the progress that has

been made, our path is not an easy one,—mainly due to the fact that we have to deal with old, more or less decrepid men, who either on account of their advanced age alone, or through their long suffering, or through complications, are poor surgical risks. Naturally we can not lay down any general rules for the treatment of these cases, but must individualize and be guided by the ordinary principles which govern medicine and surgery.

In text-books we usually find hypertrophy of the prostate gland divided into three stages and the treatment is considered separately under three headings. I think it better, however, to give the indications for treatment not categorically, but according to the individual symptoms presented.

If the functions of the bladder are still normal, while the patient has already symptoms of frequent and painful micturition, I see no reason for the use of the catheter except in the presence of cystitis. A regular mode of living, proper hygiene, the occasional use of sounds or of Kollmann's dilator for the posterior urethra, together with instillations of a weak silver solution, will often cure the chronic congestion of the posterior urethra and of the prostate.

I am aware of the fact that even in this early stage "prophylactic prostatectomy" is advocated and practiced by some surgeons; for it is claimed that in these patients in whom prostatectomy might have to be done at a later date, a surgical interference at a stage when there is little or no infection of the bladder, healthy kidneys and a good general condition, would yield much better operative results. But as it is possible that the patients may be not only temporarily, but also permanently relieved of their symptoms, a more conservative standpoint seems justifiable. I do not wish to be understood, however, as saying that no case of this sort should be operated upon; the symptoms of dysuria, of prostatism, are sometimes so marked that they alone constitute an indication for operation.

Acute retention may occur, as we know, as the first manifestation of the disease, or it may be grafted on a chronic incomplete retention. In these cases I advocate the use of the catheter, either at regular intervals, or—if the introduction is difficult, painful, or accompanied by severe hemorrhage—of the perma-

nent catheter. In some of my cases I have left a permanent catheter in the bladder for weeks at a time, during which the patient was able to be up and about and to attend to his work. I usually keep the patient in bed for the first few days, and thereafter change the catheter for cleansing purposes and for irrigation of the urethra every few days.

In a society like ours, composed of practitioners well versed in the technique of urethral instrumentation, it is not my purpose to dwell on the details of catheterization and upon the laws of asepsis and antisepsis, which are to be observed. I shall simply state the general rules which govern me in my work.

In some cases of acute retention, the patient will regain control over his bladder through the judicious use of the catheter. In others, catheterization may be difficult or impossible, or may become increasingly difficult, or the passage of instruments may be followed by severe chills, so that prostatectomy is necessary.

A case illustrating some of the above-mentioned features occurred in my practice eight years ago.

A man, 57 years old, with acute retention, was seen by me in consultation. In spite of all precautions (irrigation of urethra, washing out of bladder, internal antisepsis, and strict adherence to the rules of asepsis), every instrumentation was followed by a severe chill, high temperature, and prostration. As the patient —otherwise in good general condition—lost ground rapidly, a general surgeon was asked to be present at the catheterization. Chills however persisted. After trying various remedies, I one day gave the patient an opium suppository, prior to catheterization, and from that day no more untoward symptoms were observed after catheterization. After the acute retention had been relieved, the patient passed into the stage of aseptic chronic incomplete retention, and from that time up to the present has residual urine varying from three to six ounces. He has entirely discarded the catheter, urinates every three hours during the day and, at the most, once at night. During the last few years, he has presented himself once a month to make sure that his urine is clear and that the amount of residual urine is not increased. He is perfectly satisfied with his condition.

Had such a case come under my observation at the present

time, I think that I should have advised prostatectomy, but I mention the case simply to show what can be accomplished by conservative methods.

I shall not occupy your time with the histories of any other patients, but I desire to refer briefly to a case which has taught me never to do a prostatectomy as a primary operation, in acute retention due to enlargement of the prostate.

A man, 65 years of age, was admitted to my service at Mount Sinai Hospital with acute retention, and a bladder reaching up to the umbilicus. A number of unsuccessful attempts to enter the bladder with a catheter had been made before the patient was brought to the hospital. The house surgeon did not succeed in entering the bladder through the urethra and withdrew 50 oz. of bloody urine by suprapubic puncture. The following morning I performed suprapubic prostatectomy, and shelled out a large prostate without difficulty. The bleeding was profuse, but was controlled by gauze packing. The urine remained bloody all the time and the patient died ten days after operation without symptoms of uremia or sepsis. Unfortunately no postmortem examination could be obtained.

I suspect that this patient's life might have been saved, if I had simply done a suprapubic cystotomy and, a few days later, a prostatectomy. In acute retentions, I deem it best only primarily to relieve the symptoms, viz. the acute retention, and by the drainage of the bladder through a suprapubic wound, to relieve the tremendous strain on that viscus, the ureters and kidneys, and only when approximately normal conditions of the latter have been established, to remove the prostate. The suprapubic cystotomy is a little operation which can generally be done with ease and in a few minutes under local anaesthesia, and the presence of a suprapubic opening makes the later prostatectomy under laughing gas shorter, simpler, and more easy.

In the treatment of patients with chronic incomplete retention various factors have to be considered, viz.: the amount of residual urine, the quality of the urine, the general health, the degree of suffering, and last but not least, the social position of the patient. If the urine is clear, the amount of residual urine small, and the discomfort not great, the catheter should be used. If regular catheterization is not possible, if the patient is suffer-

ing severely, if he is steadily losing flesh and strength, if there is a severe cystitis,—not too much time should be lost with catheterization, but the prostate should be removed as soon as possible.

In chronic complete retention, where the patient is condemned to a catheter life, he should—no matter if rich or poor—be made fully aware of the dangers of catheterization, he should be told that prostatectomy, although an operation not free from danger, offers him far better chances than catheterization.

It is true that a number of patients will stand catheter life for ten years or more, or until they die of some intercurrent disease, but, as Pardoe says, they live continually "on a volcano."

I fully agree with all authors who declare that in a working man the necessity itself for catheter life is an indication for prostatectomy.

I have purposely not spoken of cases in which the presence of other diseases would contraindicate prostatectomy and sometimes any kind of operative interference. If the latter is impossible (by this I mean prostatectomy, Bottini's operation or drainage), then the catheter is the last and only resort.

I have deliberately omitted to mention when and in what diseases any one of the above-mentioned operative procedures is contraindicated, when for example, advanced pyelitis, or nephritis or myocarditis, atony of the bladder or vesical paralysis due to spinal disease, etc., prevent our interference. Nor shall I enter into the interesting question when and to what degree the presence of sugar in the urine is a contraindication to operative treatment. The discussion of these interesting questions would occupy more time than is permitted me by your chairman.

Mr. President and Gentlemen! The views that I have expressed on the use of the catheter in prostatic hypertrophy, are those which have guided me in private and hospital practice. Prostatectomy,—far different from orchidectomy, vasectomy, etc., in that it removes the obstruction itself,—has come to stay, but I think that we all agree that the catheter will always retain an important place in the treatment of hypertrophy of the prostate gland.

THE CONDITIONS IN WHICH THE BOTTINI OPERATION IS INDICATED IN THE OPERATIVE TREATMENT OF PROSTATIC HYPERTROPHY.

By Willy Meyer, M. D., New York.

AFTER a rather stormy time it seems that Bottini's operation has at last also sailed into a safe harbor, being now generally recognized as an operation which has its strict indication in the treatment of prostatic hypertrophy. At the same time, I am fully aware that there is still a minority who are opposed to this procedure as much as others are opposed to litholapaxy in calculosis of the bladder.

The reason why Bottini's operation has gained a stronger foothold as time passed by, lies in the fact that careful observation of a steadily growing number of cases operated upon by the method, has shown such truly encouraging results—results, which often were obtained in cases where operation with the knife would, in all probability, have caused the death of the individual.

I have changed the title of this part of the discussion, as it was proposed by our president, and worded it: "Conditions in Which Bottini's Operation is Indicated in the Operative Treatment of Prostatic Hypertrophy," for in many cases it is not merely preferable to prostatectomy, but the only alternative remaining to the patient, unless we would have him continue the use of the catheter for the remainder of his life in spite of the sometimes almost intolerable subjective suffering entailed thereby.

In this connection I would briefly cite the case of a gentleman, aged 60 years, who, on account of his general debility, had been refused even the establishment of a permanent suprapubic fistula by an eminent surgeon of this city. He was told that nothing further could be done for him. He suffered from bilateral pyelitis, had frequent hæmaturia from the sore surface of his prostate, voided urine every half hour day and night, with a terrible tenesmus. The multiple galvano-caustic division of the

gland was done (in 1900) with the result that the subjective trouble, as far as pain and frequent urination were concerned, was entirely overcome, although the residual urine was reduced to a certain extent only. A second operation would probably have relieved also these symptoms, but was refused. To say that a case like this could have been cured by a bold prostatectomy, as a colleague asserted in the course of a discussion some years ago, I consider a rather absurd statement.

It is but natural, that, with increasing personal experience with the various operations, the limits for using the knife should be gradually extended. We have learned that old age, as such, does not militate against prostatectomy; it is only the condition of the patient that has to be considered. Then we have learned to overcome the dangers of anaesthesia, as far as that ever can be done, by the use of nitrous oxide gas, superficial anaesthesia by means of one of the standard narcotics, spinal anaesthesia, or the application of cocaine locally, and getting the patients out of bed as soon as possible after the operation.

It is natural that we should, whenever feasible, allow our patients to benefit by the radical removal of the gland—the one procedure which strikes the trouble at its very root. Still there are cases, in which other chronic disease, such as diabetes, advanced chronic heart trouble or general debility, makes it appear imprudent to take such a risk, or where the patient or his family is absolutely opposed to the use of the knife. It is here that Bottini's operation steps in.

As regards mortality I feel sure that the death rate of Bottini's operation is smaller than that of prostatectomy. For, although it is about the same on basis of statistics collected from all over the world, it must be remembered, that the material is not the same in both instances. The cases in which Bottini's operation is done nowadays, are, as a rule, those in which prostatectomy was considered either inadvisable or impossible. Hence a comparison of results is obviously unfair. Personally, I have had a series of 30 Bottini operations without a single death, attributable to the procedure, and this number includes quite a few cases complicated with diabetes, advanced heart disease and pronounced general debility.

The reason why Bottini's operation may give such excellent

results, insignificant though the grooves cut by the galvano-caustic knife seem to be, was made especially clear to me not long ago, in the case of a patient, in whom a subsequent suprapubic prostatectomy enabled me to see the work previously done by means of two Bottini operations, neither of which had given the desired permanent relief. After cystoscopy and careful deliberation, the only explanation I could arrive at for the failure of my two Bottini operations was, that the projecting median lobe had been cut in two, from its top down to the base of the bladder, and that the two halves of the soft gland acted as valves, closing each time the detrusor muscle tried to expel the urine from the bladder. Suprapubic prostatectomy proved this explanation to have been correct. The gland had been cut in two and, the lateral incisions having been made in a horizontal direction, there was a peculiar kind of mobility of this part of the prostate, resembling the action of a swinging door. But the grooves cut (twice, it is true), had become so wide, that my forefinger easily passed through them; in other words, there were three deep furrows, each of which in its width, corresponded at least to the usual size of the internal urethral orifice and would have given easy exit to the urine, had it not been for the peculiar mechanical obstruction above described.

This experience, together with a number of others, has caused me to still more urgently insist upon prostatectomy in the presence of a median lobe, provided the patient's condition does not furnish a contraindication.

As stated above, the depth and width of the furrows found in the case described, fully explain to me the many wonderful and lasting results which I have seen following Bottini's operation in the course of the last eight years, results which were originally just as surprising, yes, almost inexplicable to me, as they were to others. My work in this direction has proven to me over and over again the truth of what Dr. Keyes senior said in a paper read before the New York State Medical Society in 1898, that generally it is not the bulk of the gland alone that produces the trouble, but the relation of the urethral floor to the fundus of the bladder. Do we not all frequently come across cases in which permanent absolute retention was produced by a median lobe, half as large as the third phalanx of the small

finger, neither lateral lobes being involved, whereas in other cases a large gland of almost apple's size only produces a certain amount of residual urine. Often have I had occasion to say to myself on viewing the internal vesical orifice through the suprapubic incision, in the course of prostatectomy, "Here Bottini's operation probably would have accomplished the same good result," although I am of course, always glad to have done radical work, if the patient recovers.

Before closing, I would say a few words anent cases with carcinoma of the prostate. These unfortunate sufferers are curable only, if we by chance radically remove the gland, that, on microscopic examination, is found to be the seat of malignant disease. If the neoplasm has perforated the capsule and begun to infiltrate the neck of the bladder and its immediate neighborhood, nothing short of resection of the bladder with greatly increased risk of life, can bring relief, and there are probably few permanent cures even after such extensive operation.

In this class of cases, too, Bottini's operation is preferable. It will prolong life and alleviate the misery of these patients without the great risk and suffering connected with the more radical procedure just indicated and which, after all, offers little if any chance of a permanent cure. Freudenberg's cases and my own observation corroborate the foregoing statement.

Summing up, I would repeat two of the conclusions of my paper on "The Choice of Method in operating upon the Hypertrophied Prostate" (read before the Chicago Med. Soc. May 24, 1905):[1]

"If operation with the knife be refused or there be contraindications to such intervention, Bottini's operation is in order. Surgeons should familiarize themselves with Galvano-Caustic Prostatotomy (Bottini's operation), as well as with perineal and suprapubic prostatectomy, in order to be able to do justice to the prostatics entrusting themselves to their care, for no one method of operation can be employed in all cases of prostatic enlargement to the best advantage of the patient. In other words, we must select the operation that suits the case.

[1] *N. Y. Med. Record,* Oct. 7, 1905.

THE URINE IN PROSTATIC HYPERTROPHY.

By Louis Heitzmann, M. D., New York.

THE gross or microscopical appearance of the urine in prostatic hypertrophy does not present any characteristics which would guide us in making the diagnosis of this condition. In many of these cases there are secondary involvements which frequently influence the appearance of the urine, its specific gravity, reaction and odor. As chronic cystitis may accompany hypertrophy of the prostate gland, the urine may be alkaline in reaction and have a heavy ropy sediment, due to the large amount of mucus in cystitis. The presence and amount of albumen depend upon different conditions. We expect to find it in small amount in cystitis, and in varying amount in cases in which a nephritis of either the interstitial or parenchymatous variety has developed. Such a nephritis may in rare cases be due to a direct ascending inflammatory process, but most frequently is a hematogenous infection. In the milder cases, unaccompanied by other lesions, the gross appearance of the urine may be normal.

Hypertrophy of the prostate gland can be diagnosed by means of microscopical examination of the urine, even when the examination of the patient does not positively reveal an enlargement. In order to understand the features found in urine, the structure of the prostate gland must be understood.

It would seem that the structure of this organ is so plain to histologists and pathologists that there could be no divergence of views. Unfortunately they exist to a great degree. While some histologists call it a compound tubular gland, others speak of it as a compound branched tubulo-alveolar gland, and still others as a compound acinous or racemose gland. If we examine different prostates we will find that the majority of them are not tubular, but distinctly acinous or alveolar or saccular. Although the epithelial lining of the alveoli varies in different cases, in the larger number it is a simple or pseudo-stratified cuboidal epithelium, while near the ducts it becomes columnar.

The excretory ducts themselves are lined by a simple columnar epithelium.

If we examine prostatic secretions from cases of prostatitis, we will find both cuboidal and columnar epithelia of a certain shape and size, and these same epithelia will be seen in the urine in cases of inflammation of the prostate gland. The cuboidal epithelia are either round, oval or slightly irregular, and vary in size to a small degree only; compared with the smaller granular corpuscles, which are the pus corpuscles or leucocytes, they are considerably larger, being about twice the diameter of the latter. Columnar epithelia are somewhat larger, but narrower and elongated. In every case of chronic prostatitis pus corpuscles are found with these cuboidal and columnar epithelia, which contain a varying number of small, glistening, highly refractive granules and globules of fat; these are secondary changes in the protoplasm and denote chronicity.

In cases of hypertrophy, besides the features mentioned, pronounced evidence of proliferation is also present, that is, many of the epithelia contain two, three or four nuclei; the so-called endogenous new formations. The same new formations may be seen in epithelia from the neck of the bladder and the prostatic urethra, if these epithelia are found in the urine, as is always the case when a cystitis and urethritis accompany the prostatitis. In addition to all these features, small connective tissue shreds are usually found in distinct cases of hypertrophy. They are irregular, wavy fibers of a moderate degree of refraction, easily to be distinguished from the pale, straight threads of mucus which are never absent. In cases of simple enlargement without hypertrophy, that is new formation of connective tissue in the gland, all the features above enumerated are present, except the connective tissue shreds, so that a differentiation cannot infrequently be made.

DISCUSSION.

Dr. W. K. Otis: The use of the cystoscope in the diagnosis of enlargement of the prostate possesses certain advantages, particularly in the earlier stages where it is sufficiently enlarged. This can be seen by the ordinary concave cystoscope, and this gives us a better idea of enlargement than others. The use of the cystoscope is not always without danger, especially in those cases which are accompanied by nephritic symptoms, as it may cause the kidney to cease acting.

The lobes of the prostate can be made out, but it is necessary that the window should be close to the lobe, and for this reason it is magnified. It is particularly useful in those cases of intra-vesical growth which cannot be made out through the rectum. We can also see whether the prostatic lobes are eroded or not. It is useful in determining the necessity for the use of the Bottini incision, and you can make out the point at which the groove should be made with this instrument. At the beginning, when Nitze made the first cystoscope, the idea of obtaining a view of the prostate occurred to him, and one of the first cystoscopes he made contained an arrangement of prisms by which the internal orifice could be seen. This was not successful, because he could not see the shaft of his own instrument, and therefore could not locate the point at which he was looking. Such an instrument should look back so directly that the shaft of the instrument can be seen. This was attempted by Young in 1900, by introducing a double prismatic instrument, which was unsuccessful because you could not see the shaft. Shortly after I also devised one of that character, which was made of a single double prism. This was also a failure. Nitze followed this with an instrument which is recognized as an instrument of value. There is, however, an objectionable bulge on the instrument, making it difficult to introduce. An instrument invented by Schlagenweit has overcome this difficulty. He imposes on the window a second prism so that it is brought directly over the one already on the instrument. This gives a directly backward view. In going through this double prism the light is diminished and the view is not as good as it should be. I presented an instrument before the American Genito-Urinary Society. It is arranged without any prism, but by the use of a ball of crystal, an excellent view is obtained, and you get a good view of the internal orifice of the urethra. Having obtained the instrument, it is unsatisfactory for the reason that the field taken in is so small that you have to turn the instrument around to get the whole orifice. You might imagine you could see the whole tumor, but you cannot. Another method of examining the prostate is one introduced by Fenwick in 1897. Where no instrument will pass he punctures the bladder above the pubes with a large trocar and gets a view through the canula, examining in this way the prostate and the bladder. This was recently revived by Tilden Brown. It has not appealed to me, because when a patient has arrived at the point where the large canula introduced into the bladder is necessary to examine the bladder, it makes a considerable operation and you get only a partial view.

Dr. GUITERAS: When the operation of prostatectomy was in its infancy I began doing it by the suprapubic route, performing also a perineal urethrotomy for drainage from below as well as from above. This was considered the best operation at the time, and the results were thought to be amazingly good for an operation which but a few years before had been considered as either impossible or as so dangerous that it should not be attempted.

At about this time there was a growing interest in prostatic surgery, and shortly afterwards a number of surgeons began to work on the gland through the perineum. The glowing reports of the results obtained by this method by other operators led me to begin performing prostatectomy by this route. At first I was very enthusiastic over the results, and devised a number of instruments to assist in the operation. The prostates seemed to come out with ease, the shock was less to the patient, and the drainage appeared to be quite satisfactory. Later I had a recto-perineal fistula develop after an operation, which had been very rapidly, and, as I thought, very skillfully performed. Then I noticed that the

results did not seem to be as good as after a suprapubic operation, and I also found difficulty in performing the operation on a number of prostates, especially in very fat subjects. In looking over the literature I found almost no references to rectal fistulas as a complication, while the general opinion seemed to be that the operation was very simple and not particularly dangerous. On conversing with my friends on the subject of injuring the rectum by this procedure, I found that many of them had had the same experience that I had had, which led me to report my accident at the Academy of Medicine. My observation of a number of cases operated on by others showed me that sometimes the entire gland had not been removed, for one reason or another, and that the symptoms had only been relieved after the operation while the patient was being treated.

I, accordingly, started in again with the prostatic operation as originally performed by me, and as taken up by Freyer and Deaver, employing certain steps which experience had led me to consider important. These were: (1) Full Trendelenberg posture; make the incision through the abdominal wall and bladder sufficiently long; retract enough to give the largest possible exposure of the operative field for my own and the students' benefit during the operation. (2) Dry the bladder well; grasp the base of the prostate with bullet forceps, one blade in the urethra, the other behind the base of the gland; make a vertical incision on either side—one through the bladder wall, covering each lobe of the gland about midway between its side and the urethra; (3) lower the patient to a half Trendelenberg position; insert two fingers of the left hand into the rectum, to make counter pressure below while holding the gland from above, by which means almost perfect control of it is obtained, and the students can see every step of the operation.

After the gland has been removed I insert a very large, thick-walled rubber catheter, No. 38 to 40 F., into the bladder for suprapubic drainage. The perineal drainage I have discarded, and instead I introduce the largest catheter that will enter the bladder easily through the urethra, one with a large single eye, or perhaps two eyes, which I leave *à demeure*. This urethral drainage I find exactly as good as the perineal, and it relieves the patient of an extra operation for the sole purpose of drainage. Such a contrivance by which double drainage can be resorted to for a few days after the operation, that is, during the haematuric period, is of the greatest service to the operator, as it allows him to irrigate through from above to below one or more times a day. The hot solution runs away through the lower tube almost as rapidly as it enters, thus cleansing the bladder thoroughly. I consider the advantage of this method of drainage from below better than no drainage from the lower part of the bladder, or by means of a perineal opening, for two reasons: In the first place, because it assists the drainage from above, and secondly because it allows the hollow remaining after the removal of the gland to fill in around the catheter without disturbing the relation of the prostatic urethra to the remainder of the canal, instead of around the perineal tube, a false route, which also favors the development of a vesical perineal fistula. The upper tube is removed in four days; the catheter as soon as the upper wound heals.

Dr. EUGENE FULLER: This question is a very large and interesting one, and I think the sentence that Dr. Willy Meyer ended his paper with is a very valuable one. There is great danger in getting too much routine in this branch of surgery. One should be prepared to resort to various procedures in order to remove hypertrophies. I remember, in the way of illustration, a case where a

man had an infection of the prostate from catheterization after an abdominal operation. His prostate was bound down by inflammatory exudate and I had to operate on him in a great emergency, as he had septic chills. I found the prostate was absolutely immovable, so that I had to do a perineal as well as a suprapubic operation and work both ways. By so doing I gradually enucleated the mass and got it out without injuring the rectum to which it was adherent. This could not have been done by either the perineal or the suprapubic route employed singly. In malignant cases I have often to combine operations in order to avoid undue damage to adjacent tissues in accomplishing removal. My experience was largely with the suprapubic operation, following the procedure I originated and published in 1895. When the perineal furor came in, I did, for a time very many that way, but I have now gone back, and in the majority of cases find the suprapubic operation the better suited and safer of the two.

Dr. Carter S. Cole: One of the early cases I saw fourteen years ago, in which the middle lobe was removed by suprapubic incision, was followed by death in three days from suppression of urine.

Dr. James P. Tuttle: I merely wish to suggest that the oozing mentioned by Dr. Wishard as preventing the use of the cystoscope during operation may be largely prevented by the hypodermic injection of adrenalin into the tissues before operation. I have used it frequently in operations of this nature and have found it exceedingly useful for this purpose, and also for the prevention of shock.

Dr. Follen Cabot: In my 37 cases of prostatectomy, the preliminary treatment has taught me many things, often overlooked. In emergency cases where a man is used up, I believe that a preliminary drainage will tide over the patient and get him in shape for another blow which will not be as hard for him as it would have been had he not had a preliminary drainage.

Irishman, 57 years of age, in poor general condition; had been suffering with urinary obstruction for 5 years and during the past three months with complete retention. The use of the catheter did not give much comfort, the vesical tenesmus continuing, accompanied by a marked failure of the general strength. The physical examination of the man, by the rectum, gave evidence of a moderately hypertrophied prostate, both the lateral lobes equally enlarged. The presence of a large third lobe was undetected and owing to the patient's condition a cystoscopic examination was not thought wise. This, however, as subsequent events proved, was a mistake. Among a list of 37 prostatectomies, 12 suprapubic, 25 perineal, I have with rare exceptions cystoscoped the patients and have never regretted doing it. As I have said, the man's general condition was such that I decided against it and not until the operation was I aware of the large third intravesical lobe. If I had known of its presence I would have performed a suprapubic operation. With my finger in the bladder during the operation I was unable to detect the size of the growth or I would then have added a cut above the bone and extracted it by that route. As it was I broke off the pedicle, which was an inch or more in length, and the lobe disappeared into the much dilated bladder. After considerable difficulty this was seized and removed. At the time no particular stretching of the tissues was observed, but on the fourth or fifth day evidence of slough in the wound appeared and for a few days jeopardized the patient's life. He pulled through, however, and now after two and a half

months has entirely healed, although the urinary control is not yet good. The general condition is excellent and the trace of albumen has disappeared from the urine.

In closing I may add that my experience in regard to choice of route corresponds closely with that of Dr. Willy Meyer. One-third of my cases; 12, suprapubic route; most serious cases, 3 deaths; two-thirds or 25 by perineal incision, the simpler cases, no deaths.

I am firmly opposed to emergency or unprepared removal of the prostate, but always now at Dr. Lilienthal's suggestion, provide for preliminary drainage and tonic treatment for these very exhausted old men. Then later a complete operation.

Dr. W. E. Deeks: I should like to refer to one method for relief of the irritation before deciding on an operation. By passing a solid steel electrode into the rectum and attaching it to one pole of a static machine, the other pole being grounded, by the use of a wave current a spark can be directed on the gland causing muscular vibrations, which acts like a milking process on it, and gives great temporary relief. It has given in my hands as well as a number of others, exceedingly good results, postponing operative interference indefinitely.

Dr. W. K. Otis: In regard to the drainage in these cases of prostatectomy, it would seem logical to make a perineal opening where a suprapubic opening had already been made, and get drainage through the perineum, but I find that the perineal tube does not drain when the suprapubic is present.

Dr. Terry M. Townsend: As an illustration of the occasional superiority of the perineal cautery operation over prostatectomy, I wish to report a case studied in Dr. Wishard's practice.

An old gentleman beyond sixty and diabetic, presented himself for relief from symptoms due to senile prostatic hypertrophy. Under local anaesthesia, perineal drainage was instituted. Within a few days phlebitis of the left leg developed, and death seemed imminent. After a short time he recovered sufficiently to leave the hospital with the drainage tube *in situ*. When his general health and diabetes had improved, he returned for further treatment. Under chloroform anaesthesia the perineal wound was enlarged, and a large phosphatic stone delivered; then the cautery was introduced and two fairly deep incisions were made in each lateral lobe. Digital exploration and visual examination through the observation window of the instrument, disclosed deep grooves through a moderately hard and fibrous gland. Recovery and complete relief from all prostatic symptoms resulted.

Dr. J. F. Erdmann: How many cases have the gentlemen lost with pulmonary embolism or apoplexy within the past three months? I have had that condition present itself within the last three weeks and within two months.

Dr. W. N. Wishard (closing): The limits of catheter life have been referred to in the discussion. Where it becomes necessary to use a catheter it is certainly desirable to keep in mind the fact that no one catheter is suitable to all cases of prostatic obstruction. Some get along better with a metal catheter, more use a soft rubber catheter and some can only use an elbow-catheter. Two

or three years ago an instrument maker showed me an elbow catheter, which was flattened laterally. I purchased some of them and found on use that they were practically worthless, as the lateral flattening increased the stiffness of the catheter. Subsequently, I requested this instrument maker to make me a modified Mercier catheter flattened antero-posteriorly.

I present the instrument and you will observe that this antero-posterior flattening greatly increases the flexibility of the instrument. It can be used where any ordinary Mercier is called for and it has the additional advantage of passing easily in some cases where an ordinary Mercier cannot be introduced.

The remarks of Drs. Fuller and Guiteras in reference to the necessity for utilizing more than one method echoes the universal sentiment of the profession to-day. This was illustrated in my first case, sixteen years ago, in which I was compelled after opening the perineum to do a suprapubic operation. After utilizing the suprapubic operation for excision of the intravesical growth, I found on conjoined examination through the suprapubic and perineal openings, that irregular nodular projections were present in the prostatic urethra. Perhaps I should now in a similar case do a suprapubic enucleation by Fuller's method. In this case, however, I passed my finger through the perineal opening and finding the nodular projections, hooked them separately with a straight tenaculum and passing a small tubular rectal speculum into the perineal wound and over the tenaculum, I was able to draw the growths down into the farther end of the speculum. Aided with reflected light from a head mirror I applied the galvano cautery in puncturing and splitting these growths. So far as I know, this was the first application of the galvano cautery through a perineal opening with the operative area under direct observation. The instrument which I have presented to-night is the outgrowth of experience obtained in this and subsequent cases. It has resulted from my conviction that one should be prepared to do an enucleation and if necessary to supplement it by the use of the cautery or in some cases to simply depend on the cautery by making an incision similar to the Bottini or do a light cauterization as the mechanical and other conditions seem to demand after making digital and visual inspection of the vesical orifice and prostatic urethra.

Generally speaking, I believe perineal enucleation to be the operation of choice, but I do not believe it should be applied to all cases. Dr. Young first thought several years ago that the Bottini operation was quite satisfactory, but he subsequently changed it for the suprapubic method and in the past three or four years has been doing the perineal. Dr. Guiteras told us to-night that he first used the suprapubic and then the perineal and is now back again to the suprapubic. There is scarcely a writer who has advocated any one method of surgical procedure on the prostate who with larger experience has not varied his technique, and who has not recognized the advantages of various procedures in special conditions. The application of the best points in the suprapubic and perineal methods should be made by the surgical judgment and skill which experience suggests.

I beg to again emphasize the fact that I believe the cautery to be a very valuable means in certain cases where we dare not enucleate, and I prefer to use it through a perineal opening, which can be afterwards utilized for drainage. In addition, the perineal opening makes accurate diagnosis of the mechanical conditions possible and such diagnosis is not possible otherwise. For simple perineal drainage local anaesthesia is all that is necessary. Local anaesthesia is also ample in the majority of cases for dilatation of the prostatic urethra, and the insertion of my tube at the time or after three or four days' drainage. It is ordinarily un-

attended with shock. I am careful to use a Bransford Lewis applicator and one-half grain cocaine tablets for anaesthetizing the deep urethra and vesical orifice and do not use a solution of cocaine. The anaesthesia secured by this method is more satisfactory and does not give the unnecessary absorption of cocaine following the injection of a solution into the urethra. After the use of three to six tablets I usually wait three minutes and then infiltrate the Schleick's solution into the perineum and immediately make the incision. If the perineum is very thick I may cut half way to the urethra and then infiltrate again as I advance. I find this particularly valuable for complete anaesthesia by injecting the infiltrated solution through into the urethral walls after the perineal opening is made and before the floor of the urethra is divided.

EDITORIAL.

THE PACIFIC COAST BRANCH OF THE A. U. A.

THE recent unparalleled disaster at San Francisco came as if planned by fate to interrupt the progressive and altogether excellent work of the Pacific Coast Branch of our Association.

The program of their meeting which was to have been held in San Francisco on April 18-19 contained papers by Drs. Vecki, MacGowan, Whiteside, Goodfellow, Krotoszyner, Grosse, and Peterkin. Were the names of these gentlemen in themselves not sufficient to stamp the character of the work being done on the Coast, reference might be made to the meeting of that section held on January 16, 1906.

We may count ourselves fortunate in having among our members the gentlemen of this Section whose enthusiasm and love of their work enables them to travel, what we in the East should consider, excessive distances in order to meet and forward the interests of this Association.

Active as has been the interest and excellent as is the work in the Eastern Sections during the past season, we must take off our hats to our brethren of the Coast, and admit that they are our masters in zeal for the cause.

It is inevitable that their work should be interrupted by the destruction of San Francisco, and that we shall miss for a time the intellectual stimulus of their splendid example, but we are not at liberty to doubt that work thus handsomely begun will be renewed with unabated vigor, and that, as their great city rises from its ashes, we shall again have evidence of their activity.

We believe that every member of the Association will join in extending to the " Coast Section " our thanks for their work in the past, our sympathy in the calamity which has befallen them, and our belief in the brightness of their future.

HUGH CABOT.

BILATERAL NEPHRITIS FOLLOWING TRAUMATIC LESIONS OF A SINGLE KIDNEY.

LUMBAR traumatism may not only have as a consequence the lesions of renal contusion, but it also may be the cause of ptosis of the kidney, with or without hydronephrosis. Following these mechanical accidents, the signs of chronic bilateral nephritis may appear and several instances of this description of undoubted nature have been reported by Castaigne and Rathery.

During the first phase of the process, which varies considerably in time, the mechanical accidents alone predominate, such as movable kidney, hydronephrosis, and so forth. Later on the symptoms of interstitial nephritis appear, there being polyuria, the urine being of low density, containing urea in small amount, and traces of albumin with a tardy or prolonged elimination of methylen blue, which completes the cardio-arterial syndrom, such as hypertrophy of the heart, a left-sided bruit de galop and arterial hypertension.

In a recent thesis upheld at Paris, Hedouin controls these clinical data by experiments, such as unilateral renal traumatism, or ligature of one ureter. These experiments showed that the kidney on the other side soon gave evidences of lesions which, in the first place, occurred in the renal epithelium and afterwards underwent an evolution towards sclerosis.

The researches of Castaigne and Rathery have defined the nature and the cause of these lesions, and they have shown that they are due to an intoxication of renal origin. The lesions of bilateral nephritis following traumatism of one kidney, have as cause the entrance into the body, by way of the circulation, of cellular disintegration of the traumatized kidney and of the resulting nephrotoxins. If this opinion is correct, an active therapeutic measure naturally may be deduced from it. A kidney considerably involved by a traumatism should not be allowed to

remain, because, under these circumstances, it would become a great danger for the other kidney which it attacks by the intermediary of toxins which are truly nephrotoxic.

In the case of hydronephrosis, the kidney may be replaced in its normal position and its normal functions may be re-established by wearing a proper abdominal belt. In practice, this treatment is usually sufficient.

The lesions of nephritis rarely follow upon a movable kidney, but, nevertheless, it would be more prudent to watch the condition of the other organ, so as to employ a general treatment against the symptoms of a commencing interstitial nephritis.

In serious traumatism, where the kidney is no longer of any use, and where, on the contrary, it may be injurious, the utility of nephrectomy may occasionally be considered. This operation, however, should be preceded by vesical separation of the urine in order to ascertain the relative functional activity of the two kidneys. Fortunately, however, one will rarely be placed in such difficulty, because wearing an abdominal binder will usually suffice to rid the large proportion of cases of their attacks. If, after wearing the support, they still continue to complain, the nervous system should carefully be examined, because, very frequently, the subjects are neurasthenics of the female sex, and possessors of a renal ptosis. Consequently, the nervous system should be attended to at the same time that the kidney is held in proper position, and usually, one should think twice before advising surgical interference.

THE LOCAL TREATMENT OF CYSTITIS.

AT the Necker Hospital at Paris a local treatment of cystitis has been employed on a large scale for several years. This treatment consists of instillations of gomenol dissolved in oil. The strength of the solution varies from 10 % to 20 %, 5 cc. being used once daily or every other day, while in some cases which are particularly painful an instillation may be given morning and evening.

The relief from the pain is the most remarkable phenomenon observed in this treatment. For example, in a patient having tuberculous cystitis with such imperious and painful desire to

micturate that walking became impossible and he was constrained to empty the bladder at once, while the end of micturition was accompanied by very severe pain, 12 instillations allowed the patient to retain his urine, while after three weeks of treatment all painful phenomena had subsided.

At the same time the bladder capacity increases, the desire to micturate is felt at longer intervals, while the pathogenic bacilli present, such as those of tuberculosis or other organisms in association with it, disappear from the urine. It would also appear that the bladder lesions are cured more rapidly than with any other antiseptic.

Cystoscopy done by Pasteau showed in several cases that cicatrization of the ulcerations took place, along with a decrease of the hyperemia of the mucosa. Lesions of the prostate are also happily influenced by this treatment and in one other case related by the above mentioned authority, both lobes were considerably enlarged, but after treatment the gland became supple and free from pain, the foci of induration nearly completely disappearing in the left lobe. An improvement in the general condition followed the local amelioration, the patients putting on weight with the return of the appetite.

Cathelin comes to the conclusion that instillations of a 10% or a 20 % solution of gomenol in oil will give very evident results, even manifest curative effects, in cases of painful or tuberculous cystitis.

BOOK REVIEWS

A Manual of Operative Surgery. By JOHN FAIRBAIRN BINNIE, M. D. Second Edition, Philadelphia, 1905. (P. Blakiston Son & Co.)

In this well-printed and convenient little manual, will be found an up-to-date *résumé* of surgical technique. The teachings set forth in its pages are largely taken from that excellent work in two volumes on surgical technique by Monod and Vanverts, as well as the practice of the Mayo brothers.

Some recent operative procedures have been introduced, among which we may mention that employed by Cumston and Rolfe for the radical cure of carcinoma of the testis.

The book will be found a useful guide to both student and practitioner.